

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1 to 25: (canceled).

26. (*currently amended*) A method of reduction treatment of metal oxides, characterized by

using as a feed material a mixed powder of a powder containing both iron oxide and zinc oxide and/or lead oxide and a powder containing carbon and containing alkali metals and halogen elements wherein an alkali/(zinc + lead) ratio is at least 0.1, where alkali is total moles of alkali salts and (zinc + lead) is total moles of zinc + lead,

mixing said feed material with water sufficient to solublize alkali salts to produce a slurry, wherein the pH of water forming said slurry is adjusted to within the range from 7 to 11.5 to reduce dissolution of zinc and/or lead compounds,

then dehydrating said slurry, thereby providing a dehydrated material enriched in zinc and/or lead, wherein said dehydrated material is optionally shaped, and

charging said dehydrated material into a rotary hearth type reduction furnace for reduction and reducing said dehydrated material in the rotary hearth type reduction furnace, said rotary hearth type reduction furnace provided with an exhaust gas treatment facility having at least one of a waste heat boiler and an air preheater.

27. (*currently amended*) A method of reduction treatment of metal oxides, characterized by using as a feed material a mixed powder of a powder containing both iron oxide and zinc oxide and/or lead oxide and containing alkali metals and halogen elements wherein an alkali/(zinc + lead) ratio is at least 0.1, where alkali is total moles of alkali salts and (zinc + lead) is total moles of zinc + lead,

mixing said feed material with water sufficient to solublize alkali salts to produce a slurry, wherein the pH of water forming said slurry is adjusted to within the range from 7 to 11.5 to reduce dissolution of zinc and/or lead compounds,

then dehydrating said slurry, thereby providing a dehydrated material enriched in zinc and/or lead, wherein said dehydrated material is optionally shaped,

mixing the dehydrated material with another feed material, and

charging said mixture into a rotary hearth type reduction furnace for reduction

and reducing said dehydrated material in the rotary hearth type reduction furnace, said rotary hearth type reduction furnace provided with an exhaust gas treatment facility having at least one of a waste heat boiler and an air preheater.

28. (*previously presented*) A method of reduction treatment of metal oxides as set forth in claim 26 or 27, characterized in that said powder contains a total of at least 0.1 mass% of alkali metals and halogen elements.

29. (*previously presented*) A method of reduction treatment of metal oxides as set forth in claim 26 or 27, characterized in that a mass ratio of powder and water in said slurry is at least 1:1.5 and a mass ratio of powder and water in said dehydrated material is not more than 1:0.4.

30. (*previously presented*) A method of reduction treatment of metal oxides as set forth in claim 26 or 27, characterized by heating and agitating the slurry at 80°C or less in the production of said slurry.

31. (*previously presented*) A method of reduction treatment of metal oxides as set forth in claim 26 or 27, characterized by shaping said dehydrated material into moist shaped articles having a porosity of at least 35% and charging said shaped articles into a rotary hearth type reduction furnace for reduction without drying.

32. (*previously presented*) A method of reduction treatment of metal oxides as set forth in claim 31, characterized by making a mass ratio of powder and water in said dehydrated material 1:0.2 to 1:0.4 and shaping said dehydrated material into moist shaped articles having an average volume of not more than 10000 mm³.

33. (*previously presented*) A method of reduction treatment of metal oxides as set forth in claim 32, characterized by making a molar ratio of oxygen and carbon contained in said shaped articles 1:0.6 to 1:1.5, charging said shaped articles into a rotary hearth type reduction furnace, and reducing them by leaving them for at least 8 minutes at the part of the furnace having a gas temperature or 1200°C or more.

Claim 34. (*canceled*).

35. (*previously presented*) A method of reduction treatment of metal oxides as set forth in claim 26 or 27, characterized in that said powder is steelmaking waste.

Claim 36. (*canceled*).

37. (*previously presented*) A method of reduction treatment of steelmaking waste, characterized by:

mixing by agitation steelmaking waste in water sufficient to solublize alkali salts, a pH adjuster, and a carbon-bearing material, then concentrating the mixture to produce a slurry,

wherein the pH of water forming said slurry is adjusted to within the range from 7 to 11.5 to reduce dissolution of zinc and/or lead compounds,

wherein said pH adjuster is at least one of a substance containing OH-groups and fly ash discharged from a refuse melting furnace or incinerator furnace,

pressing said slurry to dehydrate said slurry, thereby providing a dehydrated material enriched in zinc,

extruding said dehydrated material to shape it into shaped articles,

charging said shaped articles into a moving hearth type reduction furnace for reduction and recovering a secondary dust enriched in zinc oxide.

38. (*previously presented*) A method of reduction treatment of steelmaking waste, characterized by:

stirring and mixing steelmaking waste and a pH adjuster in water sufficient to solublize alkali salts, then concentrating the mixture to produce a slurry,

wherein the pH of water forming said slurry is adjusted to within the range from 7 to 11.5 to reduce dissolution of zinc and/or lead compounds,

wherein said pH adjuster is at least one of a substance containing OH-groups and fly ash discharged from a refuse melting furnace or incinerator furnace,

pressing said slurry to dehydrate said slurry, thereby providing a dehydrated material enriched in zinc,

adding and kneading a carbon-bearing material into said dehydrated material,

extruding said dehydrated material to shape it into shaped articles,

charging said shaped articles into a moving hearth type reduction furnace for reduction and recovering a secondary dust enriched in zinc oxide.

Claims 39 and 40. (*canceled*).

41. (*previously presented*) A method of reduction treatment of steel making waste as set forth in claim 37 or 38, characterized in that a pH of the slurry adjusted in pH by said pH adjuster is at least 8.

42. (*previously presented*) A method of reduction treatment of steelmaking waste as set forth in claim 37 or 38, characterized in that said dehydrated material contains moisture in an amount of 16 to 27 mass% of said dehydrated material.

43. (*previously presented*) A method of concentrating and recovering zinc and/or lead according to claim 26 or 27 comprising:

producing an exhaust gas by reducing said dehydrated slurry in said rotary hearth type reduction furnace,

recovering dust in said exhaust gas as a feed material for concentrating and recovering zinc and/or lead.

44. (*previously presented*) A method of reduction treatment of steelmaking waste as set forth in any of claims 26-27 and 37-38, characterized in that the pH of water of said slurry is adjusted such that the rates of dissolution of zinc and lead are 5% or less.